BOARD OF STUDIES
NEW SOUTH WALES

Centre Number

Student Number

2002

HIGHER SCHOOL CERTIFICATE EXAMINATION

Agriculture
Paper 1

General Instructions

- Reading time – 5 minutes
- Working time – 2 hours
- Write using black or blue pen
- Draw diagrams using pencil
- Board-approved calculators may be used
- Write your Centre Number and Student Number at the top of this page and page 5

Total marks – 70

Section I Pages 2–4

25 marks

- Attempt Questions 1–3
- Allow about 40 minutes for this section

Section II Pages 5–8

30 marks

- Attempt Questions 4–5
- Allow about 50 minutes for this section

Section III Pages 9–10

15 marks

- Attempt ONE question from Questions 6–9
- Allow about 30 minutes for this section

Section I

25 marks
Attempt Questions 1–3
Allow about 40 minutes for this section

Answer the questions in the spaces provided.

Marks

Question 1 (10 marks)

(a) Name ONE farm product you have studied.

Name of product .....

For the farm product you have named:

(i) Identify ONE agribusiness input used to produce the farm product. **1**

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(ii) Outline TWO marketing strategies. **2**

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(b) Explain how product specification information may be used in an advertising campaign for a farm product. **3**

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(c) Describe ONE on-farm problem and ONE off-farm problem that may occur in meeting quality specifications when marketing a farm product. **4**

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Marks

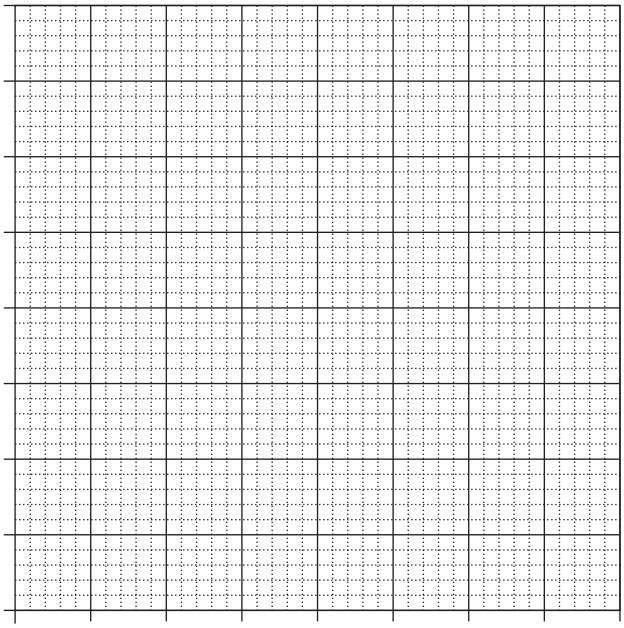
Question 2 (5 marks)

The table shows the price of a farm product over time.

Price of product over time

Year	*Price* ($/tonne)
1995	570
1996	500
1997	490
1998	420
1999	320
2000	280
2001	380

(a) Construct a graph showing this information. **3**



(b) Explain ONE factor that may lead to price fluctuations such as those shown in the table. **2**

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Marks

Question 3 (10 marks)

(a) Identify ONE problem associated with genetically modified (GM) crops. **1**

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(b) Describe the impact that scientific research and associated technology have had on the production or marketing of a product you have studied. **4**

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(c) Short-term profitability may lead to reduced sustainability in agricultural systems. Discuss how the sustainability of an agricultural system you have studied may be improved without reducing profitability. **5**

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Agriculture

Centre Number

Section II

Student Number

30 marks
Attempt Questions 4–5
Allow about 50 minutes for this section

Answer the questions in the spaces provided.

Marks

Question 4 (15 marks)

(a) Describe the pattern of pesticide use that is most likely to lead to a pesticide resistance problem. **2**

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(b) Identify ONE piece of information relating to correct usage that appears on the labels of pesticide containers and explain the importance of this information. **3**

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(c) With reference to a system you have studied, explain how integrated pest management (IPM) can minimise the problems associated with pesticide use. **4**

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Question 4 continues on page 6

Marks

Question 4 (continued)

(d) For a plant breeding system you have studied, describe the genetic basis of the system and explain how it benefits plant production in this case. **6**

Name of plant breeding system .....

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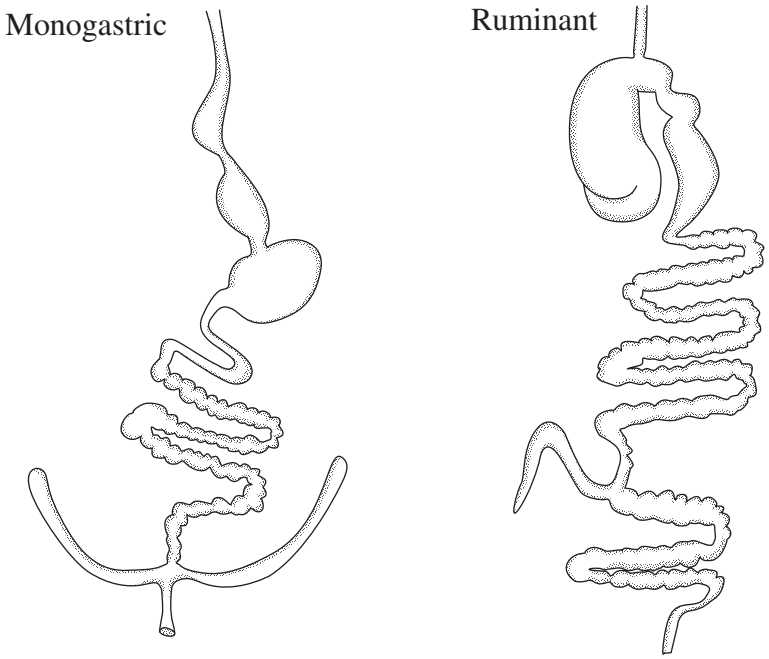
End of Question 4

Marks

Question 5 (15 marks)

The diagrams represent the digestive tracts of a monogastric animal and a ruminant animal.



(a) Label the following parts on both digestive tracts: caecum, duodenum, large intestine, oesophagus. **2**

(b) Explain ONE similarity and ONE difference in the way monogastric animals and ruminant animals digest protein. **4**

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Question 5 continues on page 8

Question 5 (continued)

(c) Using the data in the table, explain why it is preferable to retain stubble rather than to remove or burn it. **3**

Nutrient elements removed by a wheat crop (kg/ha)

Part of wheat plant	*Nitrogen*	*Phosphorus*	*Potassium*	*Sulfur*
Grain	62	14	15	4
Straw/stubble	18	3	34	6
Total	80	17	49	10

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(d) Explain the importance of minimum tillage and crop rotation in sustainable farming systems. **6**

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End of Question 5

Agriculture

Section III

15 marks
Attempt ONE question from Questions 6–9
Allow about 30 minutes for this section

Answer the question in a writing booklet. Extra writing booklets are available.

Marks

Question 6 (15 marks)

(a) Using only a labelled diagram, describe the role of microbes and invertebrates in the decomposition of organic matter and the fixation of atmospheric nitrogen. **5**

(b) Various management practices modify the nitrogen cycle. Identify THREE such management practices that involve microbes and/or invertebrates and critically assess their benefit to agricultural production. **10**

OR

Question 7 (15 marks)

(a) For a farm product that you have studied, describe ways in which information on the quality and quantity of the product can be used to plan for the future. **5**

(b) Evaluate THREE strategies that farmers may use to manage the financial pressures that impact on farm businesses. **10**

OR

Please turn over

Marks

Question 8 (15 marks)

(a) Using only a labelled diagram, describe the fate of energy in animal nutrition. **5**

(b) Your local produce supplier delivers a bag of feed with the following information written on the feed label: **10**

Feed Label

Digestible energy (MJ/kg)	=	16.0
Protein (%)	=	21.0
Fibre (%)	=	1.8

Critically assess the suitability of this product for feeding, during the growing and adult stages of an animal you have studied.

OR

Question 9 (15 marks)

(a) With the aid of a diagram, describe the change in the proportion of muscle, fat and bone during the growth and development of animals. **5**

(b) Critically assess how THREE contrasting characteristics of native and introduced plant species affect their role in pasture management systems. **10**

End of paper